

War on Hunger

A Report from The Agency for International Development

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Readers are invited to submit news items, original
manuscripts (including speeches) and photos on any
aspect of the War on Hunger. Contents of this
publication may be reprinted or excerpted freely.



David E. Bell was Administrator of the Agency for
International Development from December, 1962, to
August, 1966—a record for length of service in that
exacting post. His comments on "U. S. Domestic and
Foreign Policies and World Food Needs" (p. 1) have
been excerpted from a paper he presented in October,
1967, at the University of Illinois Centennial Symposium
on the Land-Grant University and World Food Needs,
Champaign-Urbana, Illinois. The opinions expressed are,
of course, Mr. Bell's.

The first policy issue one naturally encounters in discussing world food needs does not have to do with agriculture but with population growth. Here United States policies are in one respect quite clear. We are prepared, under the Foreign Assistance Act, to provide training and technical advice in the field of family planning, and to finance the importation into aid-receiving countries of contraceptives or the machinery to make them.

That this is U.S. policy today is a rather remarkable fact. Less than ten years ago President Eisenhower declared flatly that the United States Government should have nothing whatever to do with family planning in other countries—and he probably expressed the overwhelming view in our nation at that time. In the intervening years, Presidents Kennedy and Johnson have led a step-by-step reversal of this view, and have been supported by an increasingly firm consensus of the U.S. public—including President Eisenhower who spoke for millions by stating publicly that he had changed his earlier view, and now supports U.S. foreign assistance in the family planning field.

U.S. Domestic and Foreign Policies and World Food Needs by David E. Bell

Now that this is our firm national policy, can we regard it as a closed issue? I think not. For the evidence is accumulating that existing techniques for family planning are not adequate. Two or three years ago when the intra-uterine devices were showing their first impressive results, it appeared that at last a method was at hand which could meet the needs of families in low-income countries on a scale appropriate to the problem. However, the IUD's require many carefully trained people

to supervise insertions. The anti-ovulation pills in their present form are expensive and require continuous and sophisticated use, as well as medical supervision. And troublesome side effects limit the acceptability of both methods for some women.

More Research Needed

Consequently, the greatest need at present is for more research to find simpler and cheaper means for preventing conception. And in this regard, U.S. Government policies are still far from satisfactory. The National Institutes of Health, with a billion-dollar-a-year budget, are still spending less than \$10 million per year on this vitally important problem—less than is spent by one private foundation. Members of Congress who recently pressed for \$50 million a year for assistance to family planning programs in developing countries would do more good at present by pressing half that much upon the National Institutes of Health for research on reproductive biology and contraceptive technology.

Suppose the Government joins the private foundations in supporting research on a larger scale, when might we expect results? To ask the question emphasizes our inability to answer it. Furthermore, as and when we have better technology, there will remain the enormous tasks of education and of distribution in the low-income countries. There is no escape, it seems to me, from the conclusion that it is likely to be at least a decade under the best of circumstances before we could hope to see sizeable reductions in present rates of population growth in the less developed countries.

This does not mean that we should slacken our efforts. The only sensible attitude is to press ahead very hard not only on research, but also on the very difficult organizational task of applying in practice the best techniques we now have. The cases of Taiwan, of Korea, of Hong Kong indicate that real progress can be made with present techniques at least in special cases.

One point on which evidence has been piling up impressively is the

strength of the motivation toward family planning programs in developing countries. Stated most broadly, the problem of population growth appears to the people of low-income countries, and to their leaders, first and most importantly not as a problem of potential famine but as a problem of family and child welfare. And this, in my opinion, is a fundamental point with respect to the basis for policy-making both in less-developed countries and in the United States. The key objective in population policy—at least at present—should be to provide parents with the knowledge and the means with which they can determine the number and spacing of their children. The evidence indicates unmistakably that the great majority of parents the world over want to plan their families so they can provide effectively for the health and education of their children and for the health of the mothers. Given a free choice, parents will plan their families, and present population growth rates will fall.

Our present programs can, therefore, take a relatively simple form: find techniques that will be effective in low-income countries, and make them available to the people there.

U.S. Aim: More Food

The second policy issue one naturally encounters in discussing world food needs relates to increasing agricultural production in low-income countries. Here also U.S. policies today are quite clear and firm. All our instruments for foreign assistance—including Public Law 480—have been directed by the President and the Congress to give highest priority to supporting larger agricultural production in developing countries.

It might seem surprising in the light of the serious food outlook in many parts of the world, but this policy of all-out support to food production in less developed countries is a recent one. For years U.S. policy on this issue was, to use a fairly kindly word, ambiguous. We provided a good deal of technical assistance and other economic help to increase farm output abroad. But at the same time, we tried to prevent our aid from contributing to larger

output of crops we ourselves had in surplus. And we were so ready to make surplus food available we may well have depressed price incentives for the farmers in developing countries to produce more.

A series of important legislative changes in 1966, most of them in P.L. 480, have given us a much clearer policy stance. Today, P.L. 480 surpluses are to be made available only to countries where self-help policies and programs have been established that will lead to larger local output and reduced need for imports. A special office in the Agency for International Development has been established to give coherent leadership to all types of U.S. assistance to agricultural production, and to make sure that food production in developing countries does in fact receive first priority in our economic aid program.

U.S. policies in this regard therefore are a good deal better today than they have been before. Can we then assume that the problem is in process of quick solution? In my opinion we cannot. Two sorts of obstacles are ahead of us and both promise to be hard to overcome.

The first obstacles stem from the inherent difficulty of increasing agricultural output in low-income countries. Fifteen years ago, many of us thought this was a simpler matter: all that was needed was to make U.S. technology available to farmers in less developed countries by establishing extension services or their equivalent. This notion rapidly proved to be a monumental misconception, and we have spent much of the last fifteen years learning better.

We have learned, most importantly, that farmers in low-income countries—like farmers anywhere in the world—make very canny judgments about where their own interests lie. It does no good at all, for example, to demonstrate convincingly that applying fertilizer will raise a farmer's output of wheat if the relative prices of wheat and fertilizer are such that he won't make any money in the process. And so a broad ripple of greater realism has been moving for several years now

among the world's policy-makers, including our own. Better policies with respect to agricultural prices have been adopted in more and more countries—policies which give relatively more weight to incentives for producers and relatively less weight to the short run interest of urban consumers.

Technology Is Not Transferrable

We have learned also, after much painful experience, that United States technology cannot be transferred. The varieties of seeds and methods of cultivation that produce bumper crops in the Palouse country of Washington or the Panhandle of Texas may fail entirely in the Punjab region of India or Pakistan. We should not have been surprised by this. It has taken decades of scientific work in our land-grant universities and of trial and error by our farmers to find the adaptations and combinations that work best in the various parts of the United States. Exactly the same effort is required—on an accelerated time table—in the less developed countries.

What we have to work with is a body of scientific knowledge, and methods of scientific research and development, that have universal application. What must be done is to establish systems of research and experimentation which will produce the locally-adapted agricultural technologies that will enable the farmers in each less developed country to produce more. Most of this work must be done in the developing countries themselves, although some of it can be done efficiently on a regional basis and not all of it has to be repeated in each separate country.

Still another extremely important lesson of these last 15 years is that agricultural improvement in the developing countries cannot be achieved by itself; it can only be accomplished as part of the general economic development of those countries. This point has been confused in the minds of some because leaders in many less developed countries have tended to ignore agriculture and concentrate wholly on industrial development. But the proper correction for the error is not to swing all the

way over to concentrate wholly on agriculture and ignore industry. The only way a modern economy can advance is through simultaneous advances in both agriculture and industry, with the exact nature and dimensions of the advance in each sector being adapted to the resources, markets, and so on of the country in question.

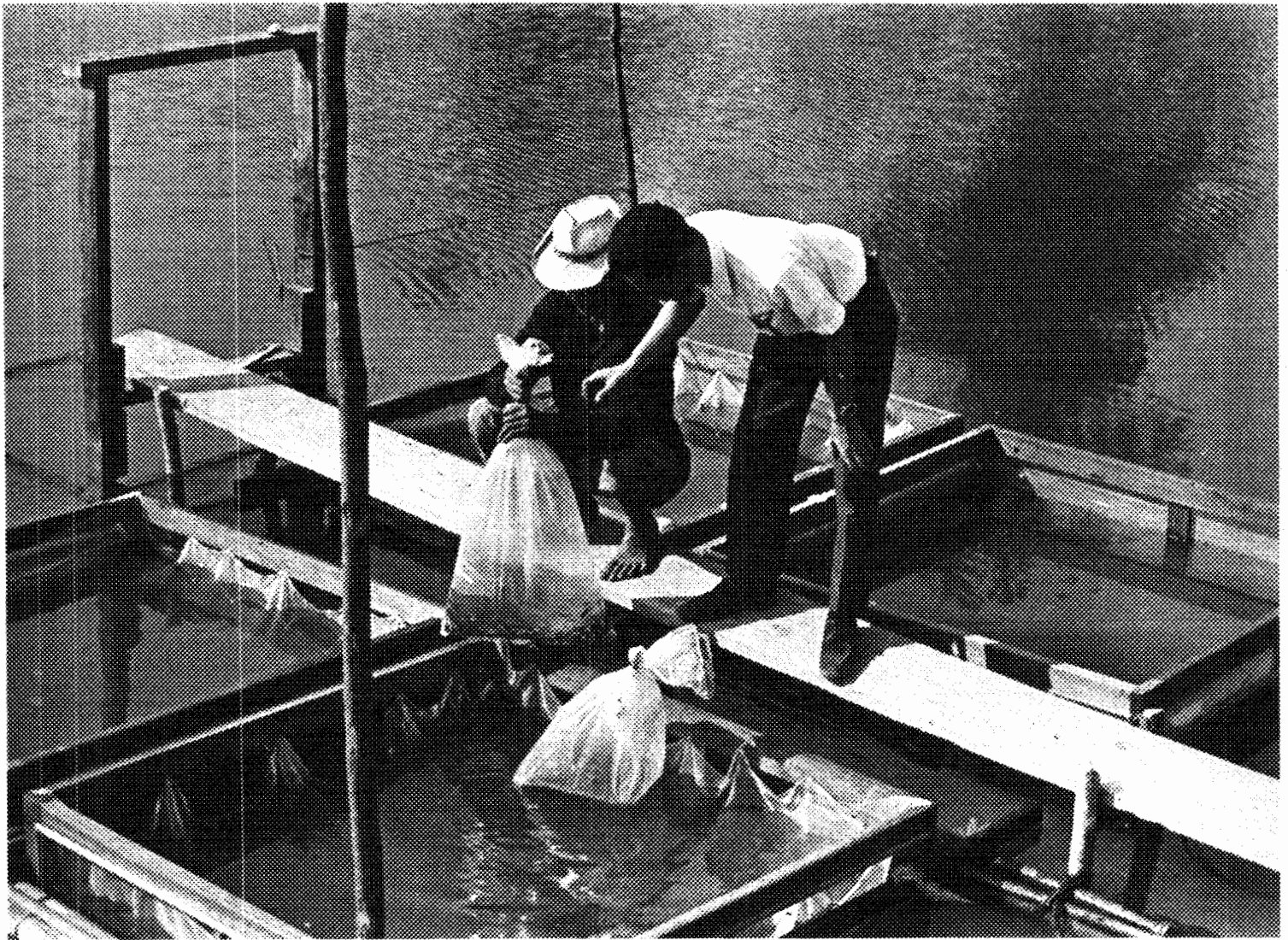
Another way of emphasizing the same point is to say that if agricultural production is to grow in developing countries, changes must occur far beyond the reaches of the agricultural sector. Internal markets must grow based on rising urban and industrial incomes. Transportation, storage, and marketing must be improved. Fertilizers, insecticides, and machinery must be manufactured or imported and in either case distributed. Financial arrangements must be created. Educational and research systems must be developed. Agricultural development therefore requires progress in the whole economy; it cannot take place in isolation.

A Task for Many Years

The present U.S. policy of supporting agricultural growth in developing countries therefore faces one substantial set of obstacles in the inherent difficulty of the task, which we have come to recognize as a many-faceted, stubborn, enormously complex problem in human and social change. We must be prepared to invest major resources for many years if we are to have any hope of success.

It is precisely here that the second set of obstacles to our present policy arises. During these recent years while we have been coming to understand better how to help less developed countries to improve their agriculture—and while we have become increasingly aware of the urgency of doing so in the light of the outlook for world population and food supplies—there has been a considerable erosion in the Congressional support for foreign assistance. Just at the time when our policy position has become most clear, we are cutting back on the means needed to carry out that policy.

(Continued on page 14)



Carp fingerlings are sacked for distribution at Nong Teng, Laos.

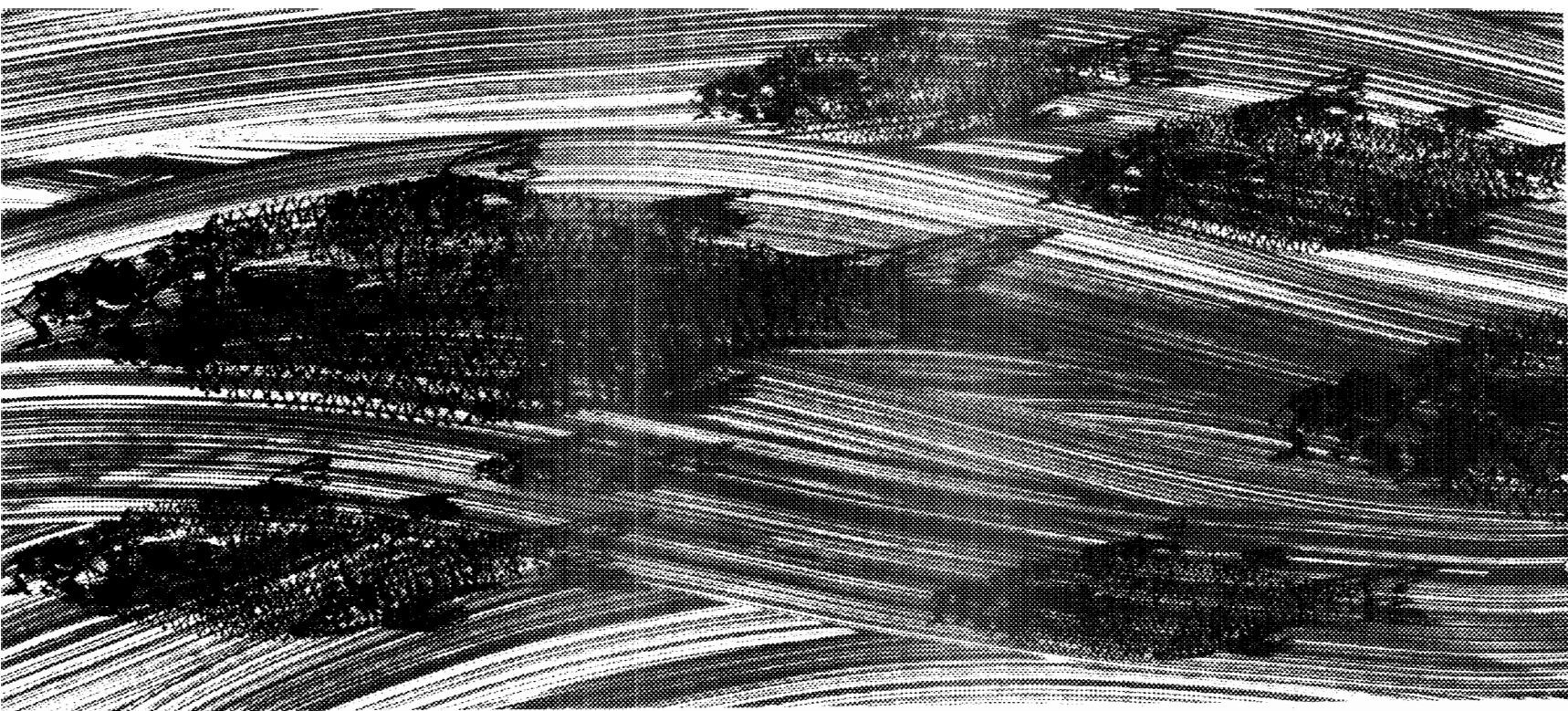
FISH CULTURE INCREASES WORLD'S FOOD SUPPLY

The art of growing fish on not-so-dry land—in rivers, streams, reservoirs, lakes, and in natural and man-made ponds—has been practiced for centuries in many parts of the world. Now, in this era of the war on hunger, fish farming is shifting to a scientific basis, and techniques that have been known for many years are being applied more widely and more intensively than ever before. The result has been a marked increase in production of fresh-water food fish.

Getting maximum returns from growing fish is a great deal more complicated than merely dumping fingerlings into suitable water. Inland fish culture has its share of problems, but it also has a remarkable combination of advantages. Using areas that are either

only seasonably suited to crop production, or serve no useful purpose except to impound water, fish culture produces a valuable protein supply and, best of all, presents it in the form of appetizing food, near where it will be consumed.

Research in the United States and other countries has provided knowledge and techniques to increase pond and brackish-water fish harvests greatly. For example, as much as 5,000 pounds per acre of tilapia, a very savory fish, can be recovered in one season when fish feed is used. Obtaining high yields of fish requires good management—a term that includes proper pond construction, selective pond stocking, control of aquatic weeds, adequate feeding, and disease control.



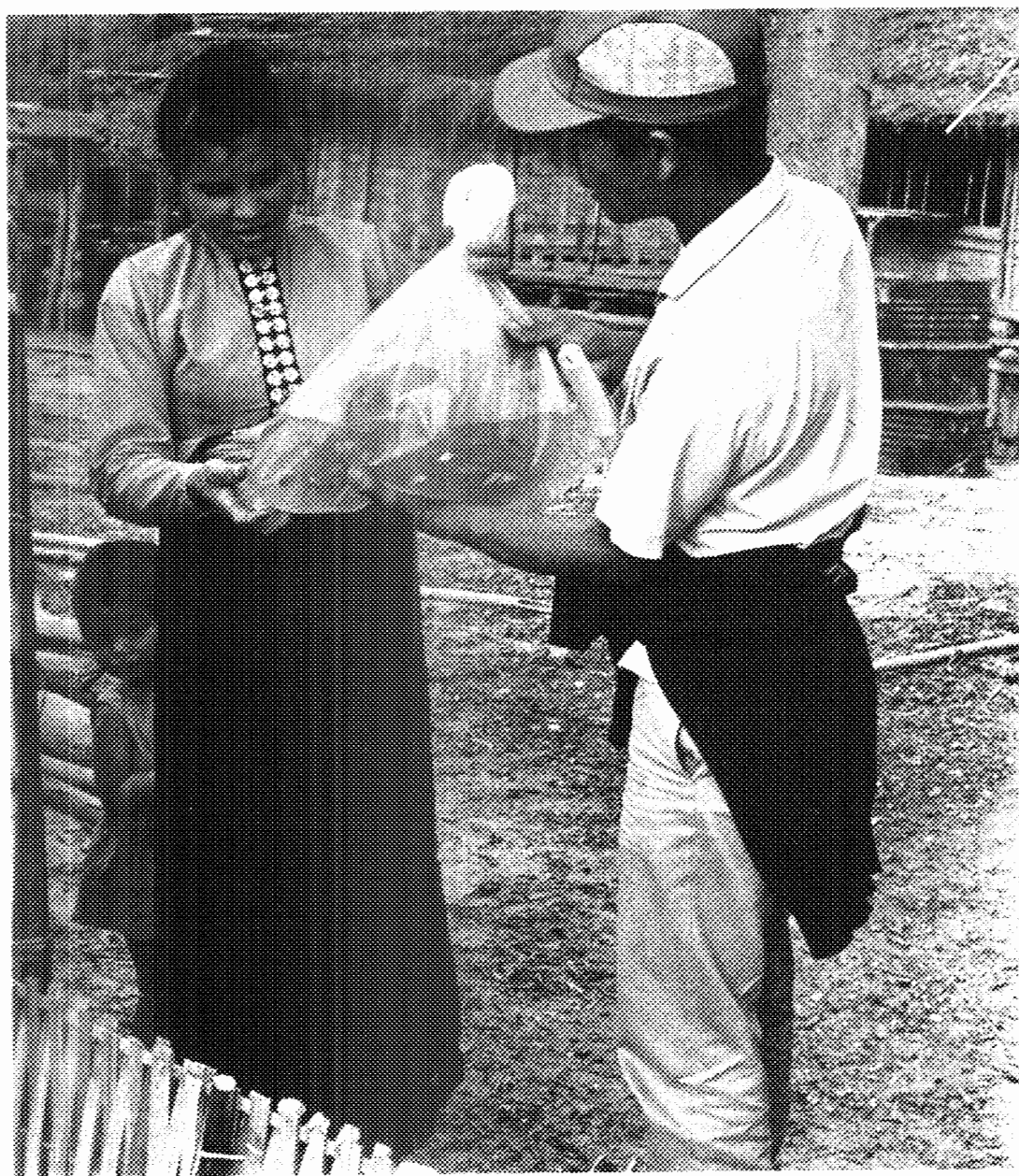
In addition to artificial ponds built expressly for fish culture, all types of natural inland waters can be used. Particularly ingenious is the technique, developed in Southeast Asia, of stocking rice paddies with fingerlings. The fish thrive in such waters, and the acreage produces, along with the rice, fish that provide much-needed protein to supplement the rice. In addition, the fish even "pay their way" by feeding on weeds; the rice stalks are too tough for them to nibble.

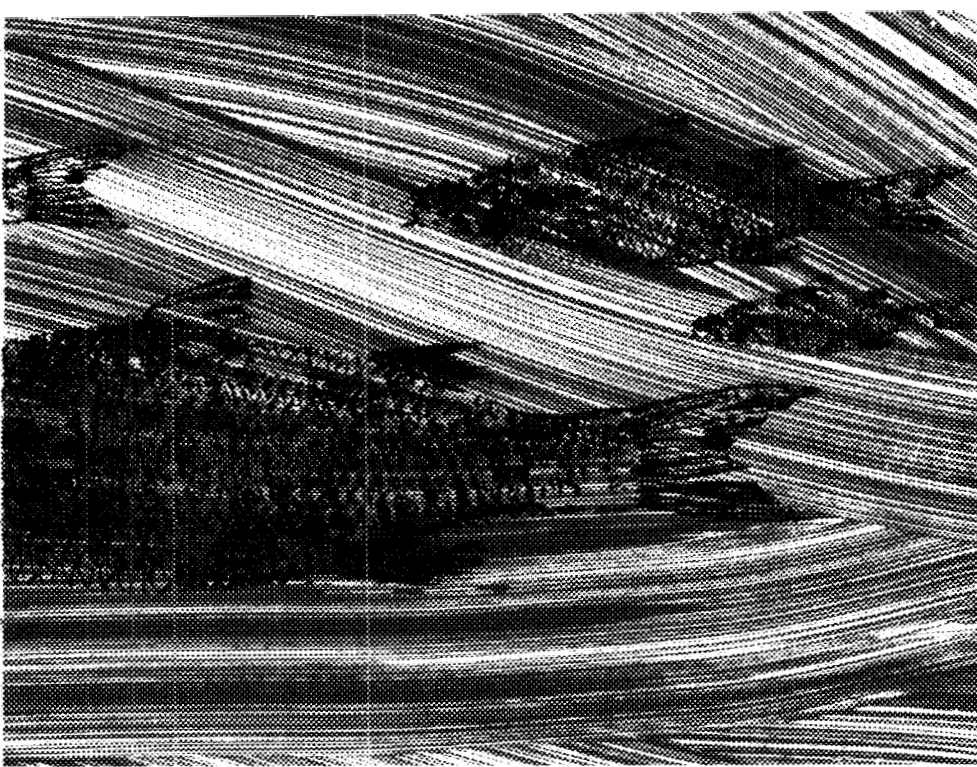
The new methods of fish culture may be seen in various countries in both hemispheres. One example is Laos, where a team of Japanese fish-culture specialists arrived in April, 1966, as contract workers on a project of the Agency for International Development. The objective was to assist the Royal Lao Government in developing fresh-water fisheries, rehabilitating existing and abandoned hatcheries, and training Lao personnel in fish production.

The AID teams are working at three fish-culture stations: Nong Teng, near Vientiane; Na Luang, at Luang Prabang; and Hua Se, near Pakse. The stations are at various degrees of productivity, although none is as yet operating at capacity.

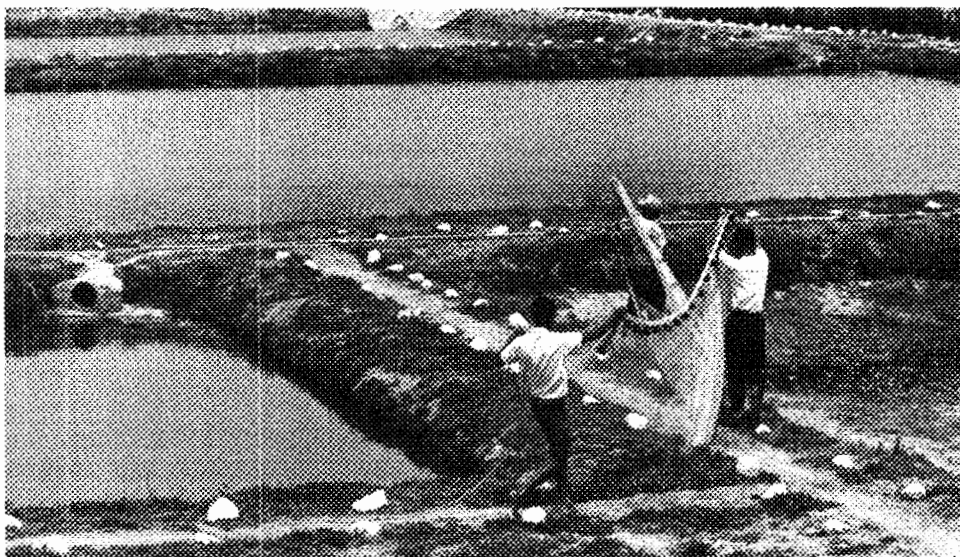
At Nong Teng, the first batch of 20,000 carp fingerlings, from Thailand, were stocked in two of the station's five reservoirs on June 15, 1966. Additional shipments of fingerlings were stocked on June 30 and

Laotian village woman gets sack of fingerlings to stock family pond.





These ponds are part of a freshwater fish farm near Mexico City.



Carp fingerlings from plastic sack will grow up in this Laotian rice paddy.



Indonesian youths at fish culture station in Central Java learn to select carp for breeding.

July 15. The fingerlings were a little more than three-quarters of an inch long and weighed a fraction of an ounce. When the fish were harvested, beginning in April, 1967, some weighed more than four pounds, and the average was about two pounds. These fish were taken to the other two stations, for use as breeding stock. About 725 adult carp were retained at Nong Teng for breeding.

Operating at capacity, Nong Teng is expected to produce one million fingerlings for sale and distribution per year, as well as 30 tons of grown fish for marketing.

The Luang Prabang station has a potential capacity of 500,000 fingerlings per year, but so far has been plagued by aquatic bugs and predatory birds and fish, as well as a shortage of trained technicians.

The Hua Se station is also in production, but has not yet approached its capacity of one million fingerlings and 10 tons of marketable fish per year.

Fingerlings produced at all three stations are sold by nearby farmers, who raise the fish to maturity in village ponds. When grown, the fish are consumed in the villages or sold in local markets.

In addition to producing fish, the Laotian stations, like similar installations in many other countries, serve as training centers for fish-culture technicians.





India's Minister of Health Pushes Family Planning

If belief in the idea will sell family planning, Dr. Sripati Chandrasekhar is well on his way to success in leading India toward a solution of her population problem.

Enthusiastic Dr. Chandrasekhar thinks, talks and advocates family planning wherever he can find an audience. And when his listeners aren't in India, he is lecturing earnestly and wittily elsewhere in the world.

Recently in Washington on his 26th visit to the United States, India's Minister for Health and Family Planning declared that India is on the verge of "take-off" in cutting its population growth. India's population is increasing at the rate of 2.5 percent annually—more than a million people a month.

"The growth rate will go down next year," he said. "It must. It has to. We are adding 13 million mouths a year—an 'Australia' every 12 months."

He "expects and hopes" India's present population of 515 million will level off at about 700 million

in 1980. "This," he says, "would be an Indian contribution to world peace." He points to India, the largest democracy in the world, as the main key to peace and stability in Asia. But continuing pressures of population growth would dim such hopes, he says.

Dr. Chandrasekhar bases his optimism on the growing awareness of the value of family planning, the acceptance of sterilization and use of contraceptives. "Already we are able to note a downward trend in certain pockets around the nation, and with further massive effort we can make great strides."

Voluntary sterilizations—both men and women—total 3.5 million, "more than all the rest of the world put together," Dr. Chandrasekhar says. "This means 11.5 million births will have been prevented over the next 10 years."

"Vasectomy is a very simple operation," he said. "The husband comes into the clinic—and goes out 15 minutes later, after a cup of tea. He goes home happy. If he is a government worker, he receives a five-day paid vacation, and we urge private employers to do the same. There may be other rewards."

Dr. Chandrasekhar said that among Indian women the rate of retention of the plastic intra-uterine device (IUD) is 70 percent. The pilot program of distributing oral contraceptives, for which the U.S. Agency for International Development is providing a grant of \$500,000, was to get under way in February. The condom production, marketing and distribution plan, also assisted by an AID grant of \$880,000, is looked upon with great hope, he said. In addition, there is domestic production, and assistance from Sweden in this program is under active consideration.

Dr. Chandrasekhar, who would resemble Ernest Borgnine if the movie and television star wore horn-rimmed glasses and had wavy, black, slightly gray-tinged hair, is profuse in gratitude for U.S. assistance.

At one gathering, attended by Senators J. William Fulbright (D-Ark.) chairman of the Senate For-

eign Relations Committee, and Ernest Gruening (D. Alaska) a leading proponent of family planning programs, he cited the \$7.4 billion in money, materials, services and food the U.S. has provided India since 1951.

"I want to particularly thank the people of the U.S. for being so extraordinarily generous in helping us to fight famine, for the kindly help of food," he said. In discussing AID's role in increasing the other "FP"—food production—he said he offered the sincere thanks of his Government to the United States—

"For putting small windows in the minds of our farmers."

In another conversation he praised the Peace Corps, particularly those Volunteers who have gone to India as couples. "They establish an objective, but close, rapport with the doctors and the people of the villages," he said. "They provide a fresh outlook."

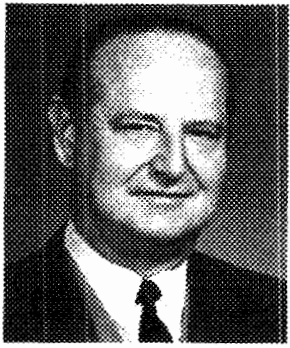
The Indian Government has earmarked \$310 million for its self-help family planning program for the current Five-year Plan. It is, of course, the largest family planning program in the world. The drive, Dr. Chandrasekhar says, has many fronts.

"We have 90 million couples on speaking—and other—terms. Of these, 55 million have more than three children. The voluntary sterilization campaign is aimed at them. Our target is one million sterilizations a year."

The publicity and education campaign to promote the use of contraceptives is directed at the other 35 million couples who have less than three children. All forms of contraception are encouraged—the IUD loop, the pill, condom, diaphragm, foam, jelly, injection—anything that will work.

"We offer the cafeteria approach," the buoyant Minister told a press luncheon in Washington. "First, we say, don't marry. Or postpone your marriage. Or, if you do marry, let the man sleep on the roof—in India that's not so bad. Failing that, try sterilization, the loop or the pill."

(Continued on page 12)



Mr. Herbert J. Waters

U.S. Takes Active Role in UN Food Program



Mrs. Dorothy H. Jacobson

The United States, in addition to bilateral assistance in food aid and agricultural development, also takes a leading role in the activities of the United Nations organizations in these fields. They are the World Food Program and the Food and Agriculture Organization.

On January 8, Mrs. Dorothy H. Jacobson, Assistant Secretary of Agriculture, U.S. representative at the U.N. Food and Agriculture Organization, announced that the United States would pledge commodities, shipping services, and cash up to a total value of \$100 million toward the U.N.'s World Food Program. The WFP has set a goal of \$200 million for 1969 and 1970.

The offer, made at the Pledging Conference of the WFP at U.N. Headquarters, includes up to \$70 million in commodities, \$27 million in shipping services to transport the U.S. commodities, and \$3 million in cash to cover 40 percent of the administrative costs of the Program.

"Since the World Food Program was launched the people and the nations of the world have become much more aware of the world food problem, and much more determined to mobilize all resources necessary to solve that problem," Mrs. Jacobson told the Conference. She added:

"We are now aware that the scientific and technological knowledge necessary to achieve that solution exists—and that therefore, if we could but put to use what we know, we could — within this generation — achieve a world without hunger. And if we could achieve that, we would have made an invaluable contribution to economic development, to higher levels of living for all peoples and to a world of peace and progress."

Mrs. Jacobson noted the "full support" of the United States for the principle of multilateral food aid, and expressed the hope that "such efforts will help to promote development to the end that food aid will no longer be necessary."

The importance of development assistance also was stressed in November at a review of FAO's field activities in helping to increase food production. As alternate member of the U.S. delegation at the Rome, Italy, meeting, Herbert J. Waters, AID Assistant Administrator for the War on Hunger, outlined the U.S. position:

"The United States believes that programs in the food and agriculture sector are extremely important within the framework of the over-all economic and social plans of the developing countries, and must be looked at in that light," Mr. Waters said. "Within our bilateral programs, we give the highest functional priority to agricultural development—but we realize that such development often may and often must include related industrial, transport, or other services."

"In one country, farm-to-market roads may be a better key to expanded food availability than improved technical knowledge. In another, the necessary key to progress may be development of industrial production and distribution of production resources such as fertilizer, pesticides, improved seed varieties, and better farming implements and machinery. In fact, attraction of such industries may in itself be the best and quickest way to disseminate new techniques to the individual farmer."

Mr. Waters called for "integrated approaches to development that would avoid overlapping and make

the best use of scarce resources, human as well as financial." He continued:

"Perhaps this can best be achieved by the establishment or strengthening, by the recipient governments in development countries, of a national coordinating body to coordinate effectively the planning assignment of priorities for action, and operations for all sectors of economic and social development within the country, including agriculture and rural development programs at the national level, thus enabling all national, bilateral and international resources to be used most effectively."

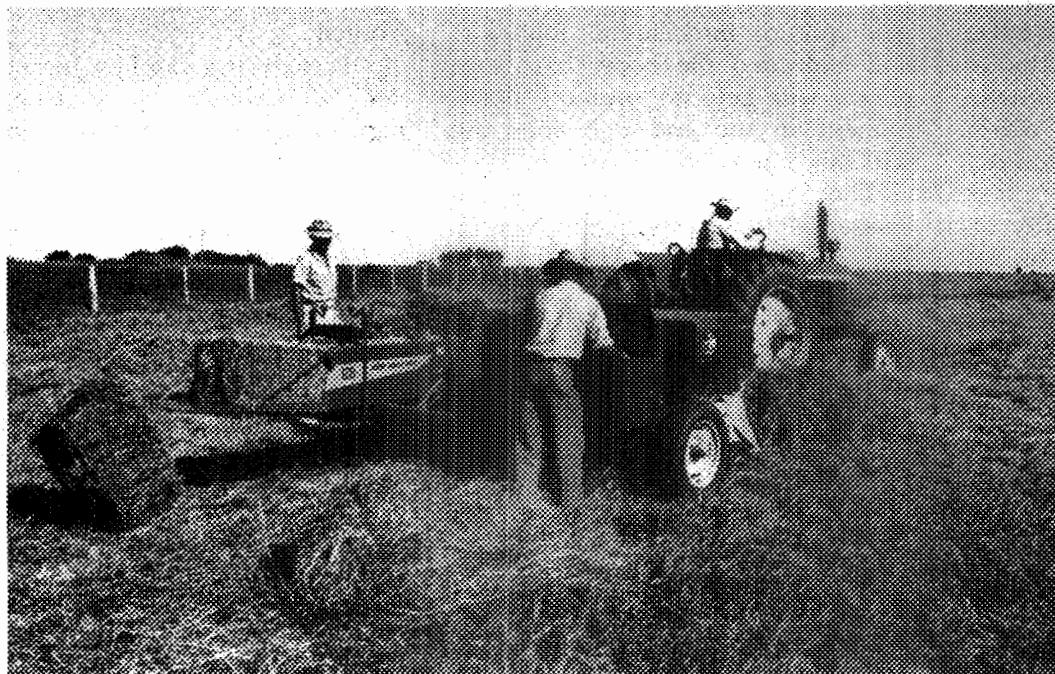
"The United States is prepared to participate, through our USAID Mission in each country wherever one is located, in consultations at the national level with the FAO Senior Agricultural Advisors or FAO Country Representatives on field program operations; recognizing that, where mutually acceptable, agreement on coordinated or cooperative arrangements for provision of technical assistance having similar priority objectives might be reached. The United States has made similar offers to meet with representatives of other agencies participating in UNDP (U. N. Development Fund)."

"At the same time, we will encourage U. S. voluntary agencies and non-governmental organizations having substantial programs in any country, to participate formally or informally in such discussion, with a view to promoting wherever mutually desirable, cooperation and/or complementary programs between official and private agencies. Many of these private agencies offer substantial assistance, and they should not be overlooked in considering coordination arrangements."



PANGOLA GRASS

A grass for all seasons

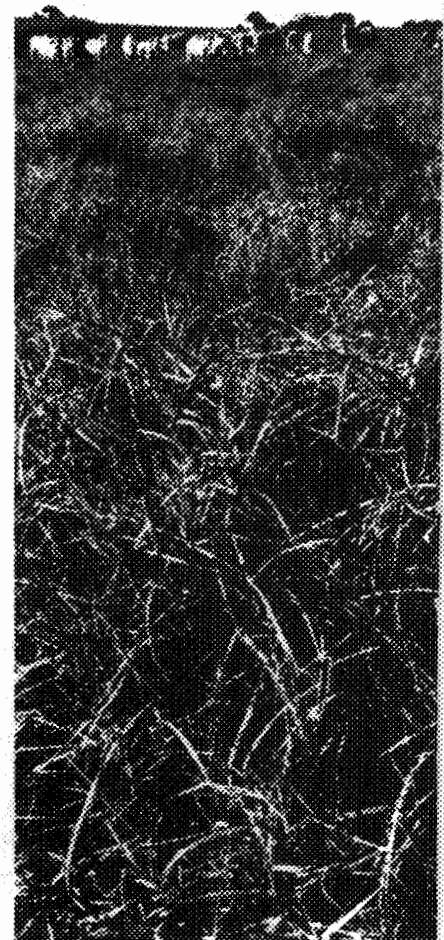


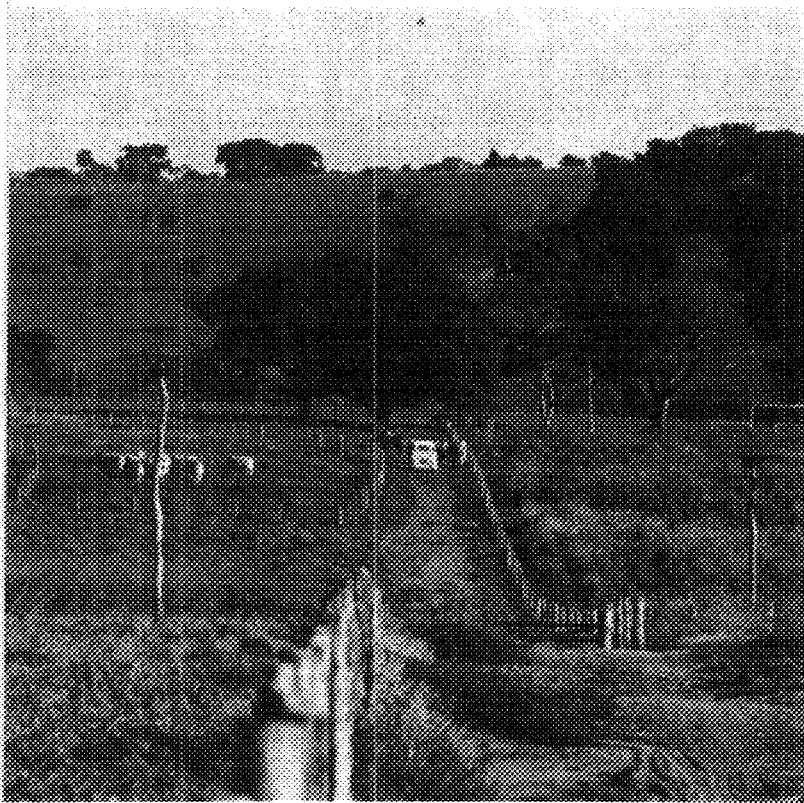
In addition to providing year-around grazing, Pangola grass is baled for winter fodder (above). Photo below shows a ranch hand herding some of the Brahmin cattle that thrive on the Pangola grass.



"Cattle

Abundance of grass means fatter ca





acceptance" of new grass is tested in a small corral (center, above).
tle(below).

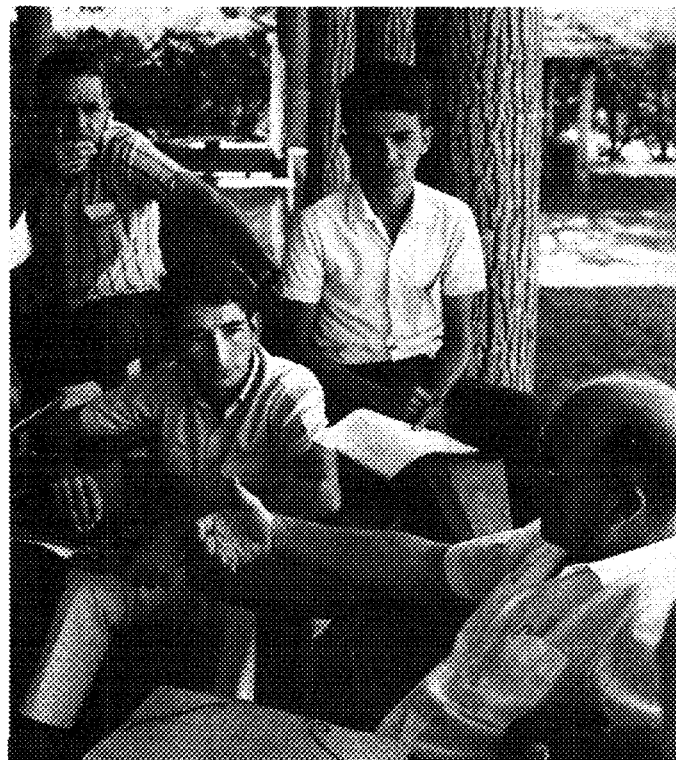
Pangola grass—originally from South Africa—is now the big thing in central Brazil. Introduced a few years ago by American foreign aid technicians working under the Alliance for Progress, this remarkable new strain of grass has been responsible for increasing beef production $2\frac{1}{2}$ to 3 times per acre as compared to the common Bahia grass. The implications for a country like Brazil where food production is lagging behind population growth are clear.

U.S. agriculture development expert Howard Reem from Wisconsin, one of many professionals from many countries assisting less-developed countries in Latin America, Africa and Asia, recognized the livestock potential in Brazil. He knew that good grass was the cheapest and most efficient way to produce good livestock. Having worked with Pangola grass in Taiwan and the Philippines, he felt it would be ideal for the "camp cerrado" of central Brazil, an arid, infertile region. Some soil research had been done in a Brazilian-American research center established and supported in part by the U.S. foreign aid program.

Cattle raised on Pangola grass can be marketed in 24 to 30 months compared to an average in Brazil of four years on regular range grass. This can mean a big difference in a country which will double its population by 1990.

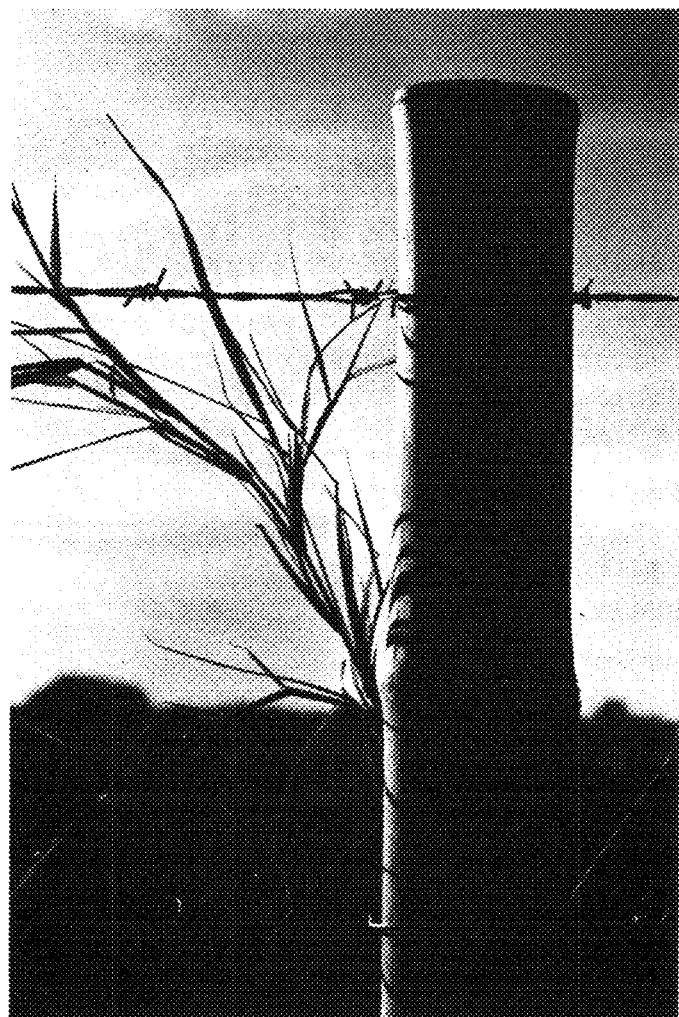
Photos: Carl Purcell for AID

(Back cover: pitching mown Pangola grass.)



Young scientists from Ministry of Agriculture learn about Pangola grass at research center in Matao, Brazil (above).

Photo below shows that grass can be beautiful, too.



NARROWING the FOOD GAP

Lester R. Brown

Lester R. Brown is Administrator, International Agricultural Development Service of the U. S. Department of Agriculture, an office set up in the USDA to service AID needs in agricultural development, and funded by AID. Here are his views on the so-called "food gap" in question and answer form:

Q: Mr. Brown, the expression "food gap" is used in different ways. What do you mean when you use it?

A: I mean the food production gap between the "have" and "have not" countries, a gap that has widened steadily in recent years. This widening is due mainly to differences—dramatic differences—in rates of population growth between those two major economic groupings, rather than differences in increasing food production.

Q: Are you optimistic about the outlook for narrowing the food production gap?

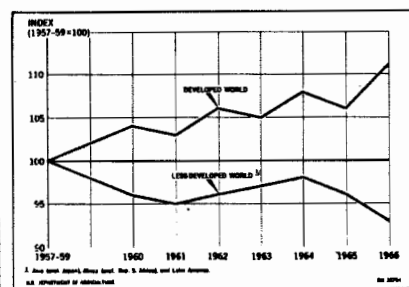
A: Despite many adverse trends, there are nevertheless some recent encouraging developments. If we can effect a rapid expansion of food production in the "have not" countries within the next few years, it will buy time in which to bring the rate of population growth to a manageable level. Indeed, one of the leading challenges before us and the world today is to see how quickly the food gap can be narrowed.

Q: What is the history of the food gap?

A: The historical record of food production, trade and price trends in the less developed world over the past quarter century is not a happy one. The basic criterion is how much food a country can produce for each of its citizens. Continuing gains in per capita food output in the economically advanced countries contrast sharply with the situation in the less developed world, where per capita food output has been lower throughout the 1960's than it was during the late 1950's. Here is a chart that shows graphically how the gap widened. (Figure 1.)

Trends in Per Capita Food Output: Developed and Less Developed World

Figure 1



Q: I suppose the sharp decline of the past two years was caused partly by the two-year drought in India.

A: Indeed it was, in large measure; but this trend should be sharply reversed this year. Cumulative policy reforms and technological gains of recent years, obscured by the two monsoon failures, combined with 1967's ex-

ceptionally favorable monsoon to produce a bumper crop. This year's food grain crop is estimated at 95 million tons, exceeding the record harvest of 1964/65 by 7 percent. Pakistan, too, appears to be headed for an excellent harvest.

We must remember, of course, that lagging per capita food output in the "have not" regions is due largely to the unprecedented population growth rates in the developing countries; and this has dramatically altered the pattern of world grain trade. This chart shows at a glance what has happened. (Figure 2.)

Flow of Grain Between Developed and Less Developed World

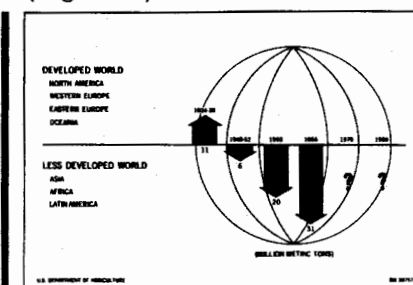


Figure 2

Thirty years ago each of the less developed regions—Asia, Africa, Latin America—was a net grain exporter, and the total outflow averaged 11 million tons per year. During the war decade of the 1940's this net flow of food was reversed. By 1950 grain was flowing from the "have" to the "have not" regions at the rate of six million tons yearly. As the population explosion gained momentum during the 1950's this flow of grain into the less developed regions steadily accelerated, reaching 20 million tons by 1960, and 31 million tons by 1966.

Q: It looks as though the grain is pouring in to match the growth in population.

A: This is another manifestation of the food gap, and the reversed flow of food is literally a "stop-gap" measure. The cause is the population growth rate, which at present in the less developed world is twice that of the developed world. Here is a chart that shows the present situation, and what will happen by the year 2000 if current trends continue unchecked. (Figure 3.)

World Population Growth By Economic Regions

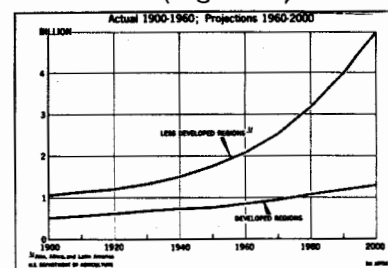


Figure 3

The addition of a billion people over the past three decades has been a traumatic experience for the developing countries. This deluge of people has resulted not only in food shortages, but has also upset development plans, canceling the benefits of billions of dollars worth of foreign aid. As a result, in this decade the rate of gain in per capita income in the rich countries, averaging some two percent yearly, has been double that of the poor countries. Both overall income levels and food output levels in the rich and poor countries are becoming more disparate.

Q: What effects are these trends apt to have?

A: For one thing, the transition of the less developed world from a net grain exporter to a net grain importer has contributed to the adverse balance of payments of many developing countries.

Agriculture comprises half the national output in many less developed countries. Its failure to advance at a sufficient rate has significantly reduced overall rates of growth, not only because of agriculture's failure to contribute its share, but also because of the effect a poorly performing farm sector has on the level of economic activity in the remainder of the economy.

An even more disturbing implication of food shortages traces to some of the longer-term human costs, as yet uncalculated. Recent medical evidence indicates that serious protein shortages in the early years of life reduce not only the lifelong potential for physical development—as we have long known—but also the potential for mental development. This damage, occurring in the early years of life, is irreversible.

Q: In your opinion, what can be done toward narrowing the gap?

A: Food production can be expanded either by expanding the area in production or by raising yields. Throughout most of history, increases in food production have come largely from expanding the cultivated area. It is now becoming far more costly to engage in this geographical expansion.

As a result, since about 1950 some 70 percent of the worldwide increases in production have resulted from rising yields, as this chart shows (Figure 4.) In fact, all of the increases in food production in both North America and Western Europe over the past quarter century

**World Grain:
Indexes of
Area and Yield**

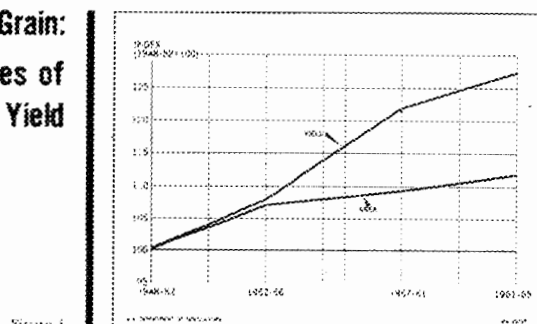


Figure 4

have come from raising per acre yields; the area under cultivation in both regions has actually declined during this period.

Many of the less developed countries, having exhausted the supply of new land that can readily be brought under the plow, must now generate yield per acre take-offs similar to those which occurred in North America, Western Europe, and Japan. These charts show how dramatic that takeoff was. (Figures 5 and 6.)

Q: What do you think is the outlook for agriculture in the developing nations? What is the United States doing to help?

A: After long neglect by many developing countries, agriculture is now beginning to get at least some of the attention it deserves. In large measure this is due to a

shift in U. S. food aid policy. Food aid is now made available only to those countries making an honest effort to expand their own food production. To be eligible for food aid, countries must commit themselves to take specific actions to improve agriculture—in other words, commodities are exchanged for commitments. These commitments vary widely between countries; they may include such things as building farm-to-market roads or fertilizer plants, or expanding farm credit systems.

This tighter leash on United States food aid is beginning to show results. Agriculture is now being placed at the top of the list of priorities in many less developed countries, and budget allocations for it are increasing sharply.

Perhaps the most hopeful single factor which will contribute to an eventual solution of the food problem is the rapidly growing recognition of the problem, and the difficulty of solving it.

The policy decisions and resource commitments needed to eliminate malnutrition in the hungry countries are not yet in prospect; but there is some perceptible, measurable forward motion along the lines I have outlined, much of which will not pay off for some years to come.

The food gap between the "have" and "have not" regions cannot be permitted to widen. Should it do so, the tensions between the two economic areas would become intolerable. Economic and political stability in the developing world are closely linked to an adequate supply of food.

It may be we have been asking the wrong questions about the food-population problem. Instead of asking, "How much will it cost to solve the food problem?" perhaps we should ask, "How much will it cost if we fail to solve the food problem?"

**Corn
Yields
in the
United
States**

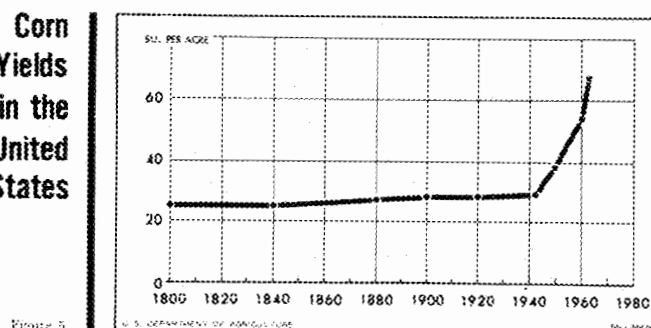


Figure 5

**Rice
Yields
in
Japan**

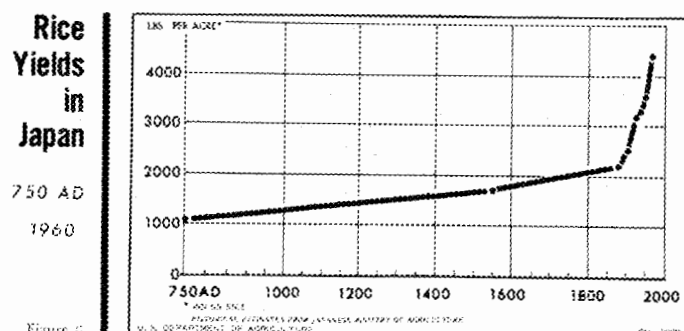
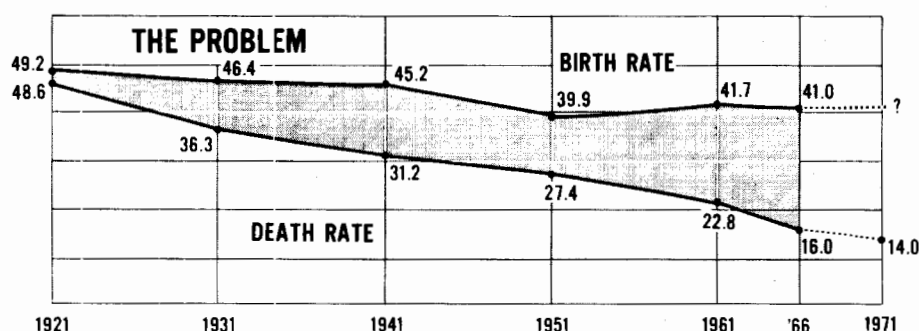


Figure 6

(Dr. Chandrasekhar from page 6)



Dr. Chandrasekhar is seeking two legislative acts to augment the family planning drive: raising the legal marriage age for girls and liberalizing the abortion laws.

"If we could raise the age of marriage to 20, we could decrease the fertility probability one-fifth to one-sixth." The average age of marriage for women in India is 14½ years, Dr. Chandrasekhar said.

In discussing the need for legislation permitting more freedom for doctors to prescribe and perform abortions, Dr. Chandrasekhar cited a new, simple abortion device that he observed in Moscow. It works on the suction principle.

"I saw it in use," he said. "I saw women undergo the operation swiftly and painlessly. It takes 4½ minutes and although the patient feels fine, she is usually kept at the clinic until the next day—to give her a rest. The whole experience is treated very matter-of-factly."

Dr. Chandrasekhar, 49, himself comes from a family that he now considers excessive. He was born at Rajamundry, Madras, one of six children. "But we had enough money," he hastily explains, "so it was not an existence problem as it is with so many Indian families."

His ties with America are strong: he has an American wife. In addition, he has pursued much of his education, teaching and lecturing activities here. Following graduation from the Madras Presidency College in 1938, where he took a degree in economics, he did research at the University of Madras. He came to the United States, studying at Columbia University. He received a

Ph.D. as a demographer from New York University.

He taught at the University of Pennsylvania and during World War II worked in the U.S. Office of Strategic Services as an Indian demographer in Washington, D.C. He lectured in the U.S. on Indian freedom after the war under the auspices of Pearl S. Buck's East and West Association.

During this time he met and married Ann Downes of Scarsdale, N.Y. They have three daughters: Radha, 17, a freshman at Manhattanville College in Purchase, N.Y. Prema, 14, and Sheila, 6. "A well-planned family," the family planning expert says with a chuckle.

In addition to a broad background as a teacher, writer and lecturer, Dr. Chandrasekhar served as Director of the Indian Institute for Population Studies in Madras from 1956 until March, 1967, when he was named Minister of Health and Family Planning.

Since then he has pushed vigorously for funds, equipment and personnel for the family planning program, which already had high priority among India's programs. Dr. Chandrasekhar has particularly urged the use of vasectomy. "It's foolproof," he says.

Of the "loop," or IUD, he says it is valuable, "but there is the problem of adverse publicity. You know, the satisfied customer doesn't say much. It's the dissatisfied customer who makes the noise. And one dissatisfied woman in a village can set back the whole program there."

Dr. Chandrasekhar's zeal is seldom suppressed. "I want to start tonight,

and if not tonight, tomorrow morning!" he will say. "Look back at India's history and you'll see why.

"We multiplied like rabbits and died like rats."

Twenty-five years ago, India had a birth rate of 49.2 per 1,000, and a death rate of 48.6 per 1,000. Since then, the birth rate has declined—to 41 per 1,000. But the death rate, thanks to massive public health efforts assisted in large part by the U.S. and UN, has dropped to 16 per 1,000.

"A proof," Dr. Chandrasekhar says, "that man has become the most indestructible creature in the world."

As a result of the increase in population, the progress India has made in food and industrial production has been eroded.

Despite his optimistic outlook the Indian Minister does not minimize the problems. "We need more doctors, technicians, vehicles, communications, information and education. We must do more to provide incentives and motivation. We know that 77 percent of the women want to plan their families for reasons of economics and health, but there are still too many families who don't know or understand what we are doing, or how planning can help their lives."

He sees the family planning program as a means of emancipating women, enabling them to get an education, be trained in vocations, and to participate more fully in community activities.

"I have a vision," Dr. Chandrasekhar says, "I see a great, free democratic nation, stabilized at about 700 million people, with all those willing to work able to find jobs; each family living in a little white house with a modern bathroom, eating three simple but nutritious meals a day, with no more than three children, all of them in school; with literate, healthy fathers and mothers who will be able to enjoy some leisure, and take part in the good things of life."

"I want to see a happy India, where there is hope and dignity for all."



Jerry E. Rosenthal

Ben Birdsall Grows Taller Corn in El Salvador

The farmers of El Salvador probably don't know that Ben Birdsall is a Ph.D. in agriculture. They may not even know what a Ph.D. is. But they are certain that the 60-year-old expert has brought them a better way of life by showing them how they can raise more food than they ever thought was possible.

Dr. Birdsall recently retired after nearly 40 years of teaching in agriculture, mostly abroad. He served with the Agency for International Development and predecessor agencies since 1958. In Honduras, Panama, Colombia, Peru, and other countries, Dr. Birdsall helped thousands of farmers improve their crops and incomes through modern agricultural techniques and methods.

It is in El Salvador, however, that he achieved his greatest success, prompting the U.S. Ambassador there to commend his "exceptional work" and to add that "all of us feel that you have left your mark."

It was in 1964 that Dr. Birdsall and Roswell Garst—the Iowa farmer who so impressed Nikita Khrushchev several years ago—made a survey of agricultural production in ten Latin American countries. They returned to Washington with the suggestion that a mass fertilizer demonstration program be implemented in one of the countries as a means of raising productivity quickly.

This could be done, they explained, by using 15 to 20 small plots of land in each community and by persuading the farmer to plant this ground with an improved seed variety, employing the proper amounts of fertilizer and insecticide. The farmer would then have visible proof that these new methods will work on his land as a result of his own labor.

AID accepted the plan and assigned Dr. Birdsall to implement the program. Because of a fairly well-developed agricultural extension service and because of Birdsall's familiarity with the country, El Salvador was chosen for the experiment.

The first program began in 1965 and comprised 3,200 demonstrations on plots measuring 20 x 20 meters. Since corn is El Salvador's most important crop, most of the first effort was concentrated in this area. With the help on the workers from the Extension Service, Dr. Birdsall showed the participating farmers exactly how to plant the improved seed and how to apply the necessary fertilizer and insecticides.

The initial results were impressive. Planted next to the farmer's unfertilized corn that yielded five to 16 bushels per acre, Dr. Birdsall's demonstration plots grew 40 to 80 bushels.

This remarkable increase gave the farmer three to seven dollars for each dollar invested in seed and chemical inputs—a "fantastic" return, according to Birdsall.

Perhaps the best indicator, however, is that more than 40 percent of the 1965 participants obtained credit to purchase the necessary seed and chemicals in order to plant their entire next crop using the new methods.

In 1966 and 1967, the demonstrations were expanded in corn and rice, including many other crops as well. Although rainfall was below normal in 1967, the demonstrations consistently showed the value of well-fertilized crops. Even when moisture was inadequate for the maximum development of plants, the demonstration plots grew far better than the traditional crops.

Over the three years of the experiments, 14,385 demonstrations were carried out. They reached directly about 12,000 rural families and had an impact on 40,000 others who just "came to look." The cost of the project, however, was surprisingly low, averaging only \$3.30 per demonstration. Private industry put up about 60 percent of the materials and supplies, AID supplied 30 percent and the Government of El Salvador provided the remainder.



Dr. Birdsall indicates height of conventional corn; demonstration plot, at left, speaks for itself.

After returning to the United States, Dr. Birdsall was happy to report: "El Salvador is advancing from a food and feed deficit country to a food export country. Rice is surplus now, corn will be surplus in 1968.

"Our experience in El Salvador," he continued, "proves beyond doubt that this republic can produce all the food and feed requirements for at least five times its present population."

But Dr. Birdsall is especially proud that the small farmer, working without large acreage and without mechanization, has been the one to profit most from the experience. From the centuries-old status of a subsistence farmer, he is now beginning to enter the economic life of his country.

On Dr. Birdsall's departure from El Salvador, AID Mission Director Andre Weisman wrote: "You can well be proud of your accomplishments during the many years you have devoted to the betterment of agriculture and rural development in the Americas.

"You have established a level of performance and devotion to duty to which others may aspire."

Don Lojek

(David E. Bell from page 2)

The reasons for Congressional discontent with foreign aid have little if anything to do with world food needs. Various members of Congress criticize foreign aid for various reasons, such as its supposed relationship to our involvement in Vietnam, or its supposed incompatibility with a strong anti-poverty program here at home. Whatever the merits of these criticisms of foreign aid, the effect on the United States policy of assistance in overcoming world food needs could be very damaging. Only a handful of votes in the House of Representatives saved the foreign assistance authorization bill for the current fiscal year from complete rejection.

I have no wish to be alarmist or cynical. But I think the facts need to be faced head on. The United States has made a policy decision to place great emphasis on helping less developed countries produce more food. This policy is plainly warranted by the urgency of the food problem in the world and by the vital role of agriculture in national development. Furthermore, we have today a better understanding of how to achieve agricultural development than we have ever had before, and a better understanding of how to use economic aid to produce permanent improvement in developing countries. Yet just at this time Congressional action is reducing our ability to deal with the problem.

The Case of India

The case of India illustrates the problem in a striking—and painful—fashion. Until recently, the Indian Government had seriously under-emphasized the importance of agriculture in their planning and budgeting for economic development. Near-famine conditions in recent years, and the urging of many in India and outside who differed with the previous view, combined to persuade the Indian Government to make dramatic changes in its previous policies beginning about two years ago. India's policies regarding agriculture are far from ideal today, but they are vastly better than they were. The stage is set therefore for much more

efficient use of foreign aid in India than has previously been possible. Under these circumstances, a strong case can be made that India should receive more aid than in the past, in order to make the most rapid possible progress toward economic independence. But in fact the cuts already made by the Congress in the foreign aid bill—combined with similar restrictions in other major aid-giving countries—will not only prevent any increase in aid to India but will actually force a reduction from recent levels.

These comments about U.S. government policies are not meant to imply that government action is all that is necessary to help the agricultural progress of developing countries. Far from it. The Rockefeller, Ford and other foundations can and should do more in research, training, and technical assistance. In this connection, the Rockefeller and Ford Foundations are now working toward the establishment of two new regional institutes for research in tropical agriculture, similar to the present wheat and corn research institute in Mexico and the rice research institute in the Philippines. Equally important, we are seeking to build relationships between these regional institutes and the national research establishments in various less developed countries.

U.S. universities also can do more to adapt their educational research and service practices to the needs of today's international life. The universities need foundation and government funds to finance part of this adaption. But they need to go further, in my opinion, to build international activities into their regular budgets—and to convince trustees, legislators, and other governing units that this is necessary for the benefit not of the people of developing countries but of the people of the United States, who are living in an increasingly interdependent world.

U.S. private businesses can also do far more than they have done to date, in my opinion, to identify and pursue opportunities for investment in agriculture and agriculture-re-

lated enterprises in developing countries. It has been heartening to see the very great increase in interest in the last few years among some of the strongest and most experienced U.S. companies—producers of fertilizer, of seeds, of machinery and of many other agricultural inputs—in the potential markets in less developed countries.

But all this is not enough. Foundation and university resources are limited, and the opportunities for U.S. private business will in general become larger as developing countries approach the condition of being economically self-sustaining — after, that is to say, government economic aid has done its job. I think the leaders of foundations, universities, and private business who have had the most experience with the less developed countries would agree that there is no substitute, in the early stages of assisting less developed countries to get started on the upward path, for a sizeable and well-designed government economic aid program.

There is no escape, therefore, in my opinion, from the conclusion that the principal need at the moment in the United States to assist less developed countries to raise their agricultural production is strong support for the two principal economic aid statutes: the Foreign Assistance Act and Public Law 480.

Policy on U.S. Agriculture

The third—and last—issue I wish to discuss is the question of what policy we should adopt toward our own agriculture in the light of world food needs.

The basic question posed for American agriculture by the world food outlook is what will be the requirements for U.S. food exports, and on what terms, over the next decade or so. The question is not easy to answer. It depends first on estimates of population growth and of income growth in developing countries in order to arrive at some estimates of food demand. It depends second on estimates of economic growth including growth in agricultural production in the developing countries. It depends finally

on estimates of agricultural production in developed countries other than the United States and on assumptions about their policies regarding trade and aid.

Several careful attempts have been made recently to reach conclusions based on reasonable estimates of these various factors, and I think it is fair to say that something of a consensus is emerging among those who have studied the matter most closely. If I understand them correctly, the experts offer the following conclusions:

- First, given likely rates of growth in population, income, and production in developing countries, it should be possible to meet the food import needs of those countries for the next decade or two without calling on the full production potential of the advanced countries. It is not likely, that is to say, that we will face widespread famine conditions in the next decade or two.

- Second, this relatively reassuring conclusion is tempered by the parallel conclusion that the prospect for substantial progress among the hundreds of millions of impoverished and undernourished people in the developing countries rests very heavily upon their ability to improve agricultural output and incomes, and this will be an extremely difficult task, for reasons I have referred to earlier.

So far as the United States is concerned, therefore, it appears that for at least the next ten years, and probably a good deal longer, we are not likely to need to bring into production all unused U.S. capacity in order to meet world food needs. We should expect to see a continuation of the situation of recent years in which there is simultaneously surplus agricultural capacity in some countries and very tight food supply situations in others. There will continue to be need for United States aid in the form of food commodities—though it is not possible to estimate amounts with any precision—to deal with short-run difficulties such as droughts, and to deal with some longer-run situations (such as India, perhaps) while the economic growth

process is being established that will permit sufficient food to be produced locally or purchased commercially on the world market.

United States policy should therefore continue to be to make food commodities available as aid where they are needed, so far as possible in the context of international assistance efforts, and to set our domestic production targets to produce enough for this purpose over and above what is needed for commercial markets.

Trade Not Aid

The major long-term interest of U.S. agriculture however is in trade, not aid; it lies in sharing in the growth in world trade in agricultural commodities. To this end it is important, first, that U.S. policies—public and private—be aimed clearly at keeping U.S. agriculture competitive in world markets. It is important, second, that U.S. policies strongly support the economic progress of the developing countries, so those countries will gradually become much larger commercial markets. It is important, finally, that U.S. policies strive to maintain open access to world markets for U.S. agricultural producers.

In this last connection, there seems to be at present a serious risk of reversion toward protectionism. There are strong forces in the Congress currently urging higher U.S. tariffs and tighter U.S. quotas on such commodities as steel and textiles. U.S. agriculture has a very big stake in opposing any such action. There is already too much protection against U.S. agricultural exports in other parts of the world, and we cannot successfully argue against other people's tariffs and quotas unless we are prepared to lower our own.

The question whether the U.S. leads a march back toward more trade restrictions is therefore likely to be a major policy issue for our country over the months to come. U.S. agriculture, with its enormous interest in access to the growing world market for agricultural products, has a crucial stake in the outcome.

In summary, it seems to me that

U.S. policies relating to world food needs are generally clear and sensible, but there are some important areas of concern. With respect to population growth, the United States has not yet put nearly enough resources into research on better methods for family planning. With respect to agricultural output in less developed countries, by reducing foreign assistance, we are seriously undercutting our own admirable policy of helping the people of low-income countries to help themselves. Lastly, with respect to U.S. agricultural exports, there is serious danger that current moves in the Congress toward more restriction of U.S. imports will succeed, and one inevitable effect in that event will be retaliation abroad in the form of more restrictions against U.S. agricultural exports.

In Print

Recent Publications of Interest

Food and Fiber for the Future, A Report of the National Advisory Commission on Food and Fiber. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. \$1.25

A look at U.S. agricultural policy with special emphasis on the world food problem. The Commission recommended that the U.S. should continue to stress private industry as a source of development capital and technical know-how; improve access for the products of developing nations to earn foreign exchange; extend technical and economic aid to developing countries on the commodities which they can produce best; and orient U.S. aid programs heavily toward technical assistance for increasing food production and family planning.

The Economics of Agricultural Development, by John W. Mellor. Cornell University Press, 1966. 403 pp. \$10.00

Mellor, agricultural economics professor at Cornell, emphasizes long-run programs leading to overall economic development.

IN BRIEF

WOH Research Projects

More than 80 percent of AID research funds for fiscal year 1968 are going into War on Hunger projects, according to an announcement of the AID Research and Institutional Grants Staff.

Of the \$6,175,000 available for research, 19 on-going projects requiring FY 1968 funding account for \$5,596,000. Sixteen of the on-going projects are in the War on Hunger, as are three new projects which account for \$295,000.

* * *

Ford Foundation Aids Indonesia

The Ford Foundation has announced grants totaling almost \$1 million for Indonesia.

Previous Ford Foundation aid to Indonesia stopped in 1965, when the Foundation's Jakarta office closed because of adverse political conditions.

* * *

World Conference on Animal Production

The Second World Conference on Animal Production meets July 14 to 20 at the University of Maryland. The conference is a function of the World Association for Animal Production (WAAP).

WAAP membership at present includes the American Dairy Science Association, the American Society of Animal Science, the Canadian Society of Animal Production, and similar groups in Europe, Australia, New Zealand, Japan, and South Africa.

Until the week preceding the Conference, the Secretariat will be located in Beltsville, Md. Mr. N. R. Ellis, Secretary-Treasurer, may be reached at 301-474-4800, ext. 384.

* * *

PL 480 Agreements, Authorizations

The U.S. Department of Agriculture has signed a Public Law 480 agreement with Vietnam providing for the sale of \$4.8 million worth of U.S. wheat flour. The Title I agreement provides that the flour, about 132 million pounds, be paid for in Vietnamese piastres.

The Department of Agriculture has also issued purchased authorizations to India for \$48,247,000 worth of wheat and \$10,009,000 worth of grain sorghum, to be paid for in local currency;

—to Ceylon, for \$360,000 worth of yellow corn, on a Title I long-term dollar credit agreement.

* * *

Exotic Foods Will Stay That Way, Experts Hold

Exotic foods such as petroleum derivatives or plankton have small chance of becoming a meaningful part of the human diet in the next 10 to 15 years, the President's National Advisory Commission on Food and Fiber has reported.

Protein foods from petroleum, for example, are given only a three percent chance of commercial success by 1980, while plankton, the minute form of sea life, is rated as low as one-half of one percent.

These and other forecasts are contained in a technical paper issued in October by the Commission. The paper, "The United States Food and Fiber System in a Changing World Environment," was prepared by Professor Henry B. Arthur and Associate Professor Ray A. Goldberg of the Harvard Graduate School of Business Administration, and Dr. Kermit M. Bird, a Visiting Research Fellow of the Harvard Business School.

In the discussion of "Low Cost Foods for Underdeveloped Countries," the following table appeared:

Food Product	Probability of Commercial Success by 1980
	Percent
Lysine to Supplement Grains	95
IRI-8 Rice	95
Opaque-2 Corn	90
Fish Protein Concentrates	95
Protein Foods from Soybeans, Sunflower, etc.	80
Soybean Milk	60
Fungi Proteins	20
Protein Foods from Petroleum	3
Protein Foods from Sea Water	5
Protein Foods from Sewerage Wastes	7
Protein Foods from Industrial Wastes	5
Plankton, Chemical Synthesis, Synthetic Energy Compounds	½

Quotes

A common goal

"We are not involved just in a decade of development, but . . . a generation of development. And in this decade or generation, heroic efforts will be required if we are to succeed. Those efforts, it seems to me, must be jointly devised to achieve understanding on the part of the people in all countries of the inseparable interests of people—in the richer and the poorer nations—to achieve a common goal, an understanding of the very complex and contentious issues that are involved in this almost unprecedented concept of deliberately transferring resources for the sake of the growth of other nations."

Rutherford M. Poats
Deputy Administrator,
Agency for International
Development

To narrow the separation

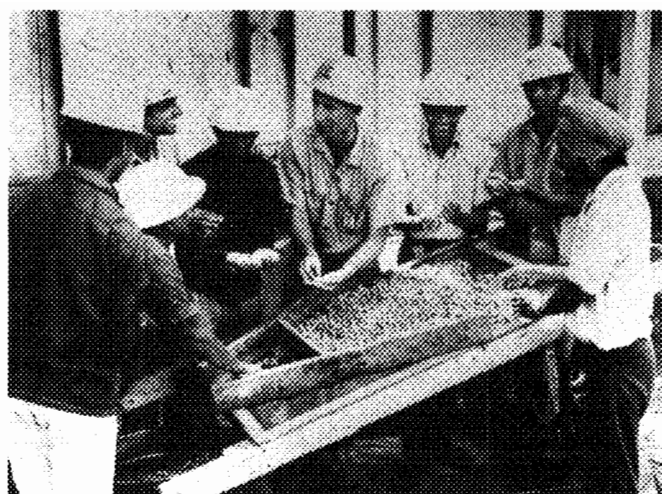
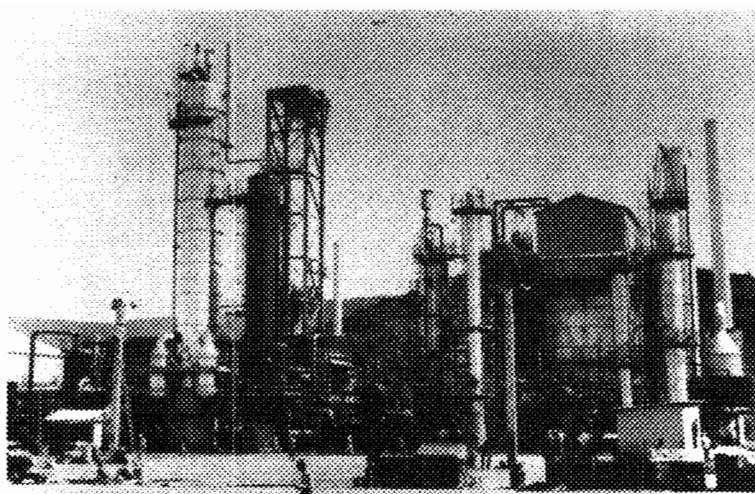
"Today we have the resources, the experience and the knowledge to narrow the separation between the rich and the poor. But we are held back by lack of direction and lack of will. We may have stolen the Promethean fire but at present we do little more than complain that it is burning our fingers."

George D. Woods
Retiring President,
The World Bank Group

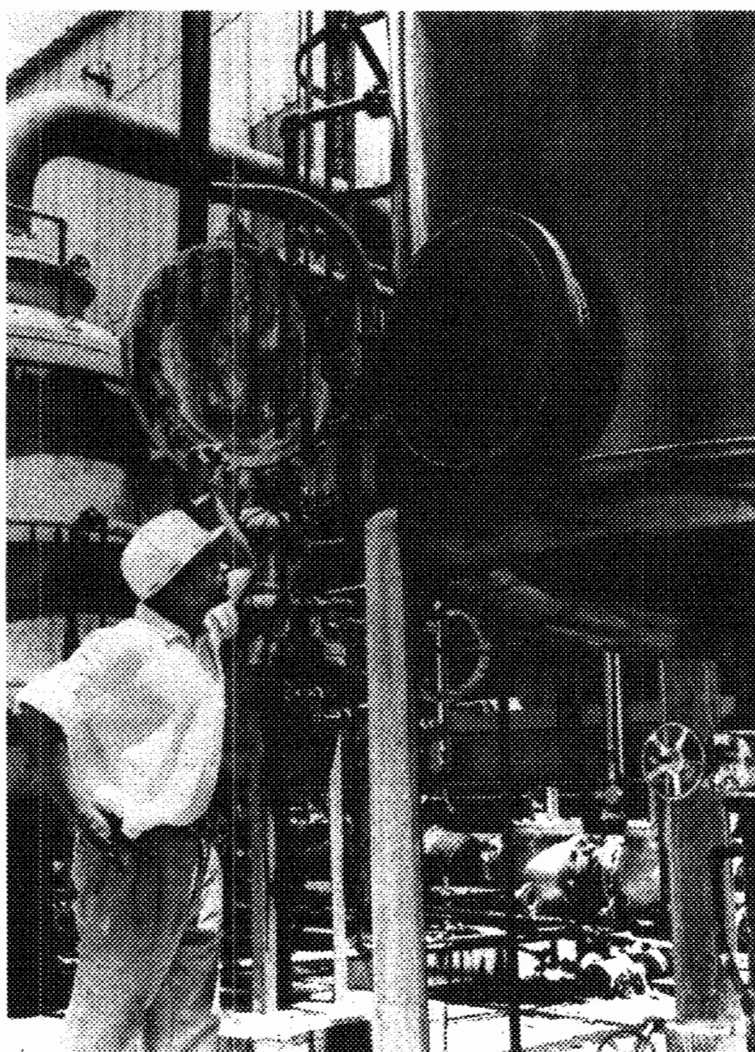
Some meaningful relationship

"I believe that American scientists and highly trained professional people will be working in some meaningful relationship with the developing nations for at least the rest of this century. For, in general, the economic gap between the advanced and the less advanced countries will probably continue to widen for that long, and it will continue to be essential to our national interest that these trends be reversed."

Erven J. Long
Director, Research and Institutional
Grants Staff,
Office of the War on Hunger, AID

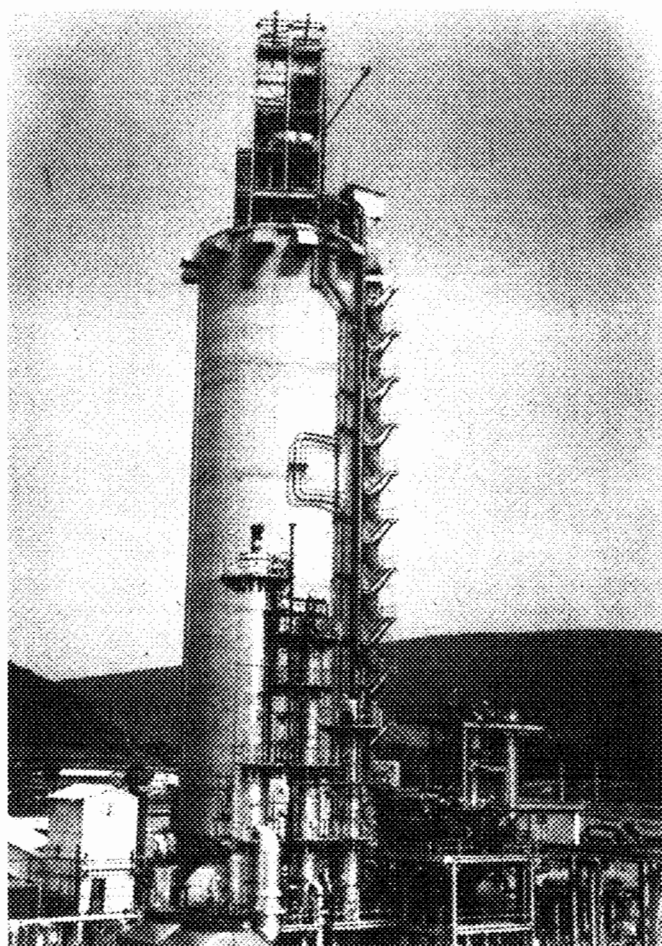


The Coromandel Fertilizer Complex



Coromandel, located at Visakhapatnam, on the Bay of Bengal, began producing fertilizer last December. Above, an Indian engineer checks out some massive machinery. Photo at right shows the towering urea plant, with a yearly capacity of 16,500 tons. Other plants in the Coromandel Complex produce ammonia, phosphoric acid, and sulphuric acid.

Fertilizer from the Coromandel Complex, shown in these photos, will add enough food to India's harvests to feed eight million persons for one year. Coromandel, a \$70 million joint Indian-American venture, will help India save \$30 million yearly in foreign exchange for fertilizer imports. The ammonia plant, one of five units in the complex, is shown at left above; right, an American specialist (center) and Indian technicians examine ammonium phosphate granules, part of Coromandel's annual production of 260,000 tons.



OFFICE OF THE WAR ON HUNGER
DEPARTMENT OF STATE
Agency for International Development
Washington, D.C. 20523

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Agency for International Development

